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WHEAT VARIETIES IN NEW ZEALAND

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In the course of the last few years, a number of new varieties have appeared on New Zealand wheat fields. At the same time our knowledge of the older varieties has been greatly increased by variety trials, baking tests, crop surveys, statistics, and, last but not least, by farmers' observations. It is now possible to define the most suitable wheats and to indicate those which have failed to show distinct advantages. In addition, some new varieties, which are coming on the market shortly, will be described.

Solid-Straw Tuscan

This variety requires neither description nor recommendation. Its most remarkable qualities are its resistance to "shaking" and its high degree of adaptability. This has made Tuscan for many years past the standard wheat of the medium and light land in Canterbury. Its proportion, for the whole of New Zealand, averaged about 70 per cent of the wheat area. In recent years the Tuscan area has declined rapidly; it was 70.4% in 1936, 65.3% in 1937, 55.5% in 1938 and it may be presumed to be still lower in the current season, 1938-39. The main reason for this trend is the introduction of Cross 7. This variety rose from 0.7% in 1936 to 6.1% in 1937 and to 20.3% in 1938.

An analysis of the threshing returns shows that Cross 7 has displaced Tuscan mainly on the heavier land where Tuscan is liable to lodge. In view of the favourable results achieved with Cross 7 on various classes of land, this variety is likely to spread further at the expense of Tuscan. In addition, a number of new varieties are to come on the market shortly which will enter into competition with Tuscan. "New Tuscan," to be released shortly by the Wheat Research Institute, possesses all Tuscan characteristics combined

with a distinctly higher yield. Another new variety, of highest baking quality, will offer further competition to the old standard. As a spring wheat, Tuscan has frequently been subjected to criticism; now Cross 7, Tainui, and Jumbuck are likely to take its place in this capacity.

Extremely useful as Tuscan has been for the last forty or fifty years, its replacement by new and better varieties is a definite progress which should make itself felt in an improvement in yield, baking quality and ease of harvesting. Whilst it is possible that districts may be found where Tuscan proves superior to any of its rivals, in the meantime Tuscan growers may be advised to give a trial to the new varieties.

Cross 7 is in many respects similar to Tuscan. In yield it has proved, in over fifty accurate variety trials, on the average equal to Tuscan. In the threshing returns of the past two seasons, Cross 7 has outyielded Tuscan by a wide margin in a number of districts. This, no doubt, is mainly due to the fact that at present the new variety is largely grown on the heavier land where Tuscan is likely to "go down." Growers should therefore not be misled into expecting great yield increases over Tuscan on similar land. The chief virtue of Cross 7, from the grower's point of view, is its resistance to lodging and therefore its ease of harvesting. This is a most valuable characteristic on Tuscan country where lodging is a more or less regular feature, such as the Timaru Downs or the Marlborough Plains. Cross 7 has shorter straw and matures up to a week earlier than Tuscan. It makes tight sheaves which seem to induce more sprouting in an exceptionally wet harvest season. It is as resistant to "shaking" as Tuscan and is very suitable for heading.

Cross 7 has frequently been

observed to be more resistant to "straw-break" than Tuscan. This characteristic, owing to the frequent occurrence of "straw-break" on the light and medium Canterbury land, is an important factor in favour of Cross 7. It is a factor that is often overlooked. Owing to its earlier maturity it commends itself as a spring wheat. Its baking and milling properties are markedly superior to those of Tuscan; good lines of Cross 7 can be used to advantage for blending with poor lines of Tuscan or Hunters. It is therefore a valuable contribution towards making the Dominion independent from wheat imports for blending purposes. After many years of trials and four years of field cultivation, Cross 7 may be recommended to the farmer for all medium and light land where Tuscan is grown at present, and for all heavier land where Tuscan is grown but "goes down" frequently. On the other hand growers should be warned that on the best of wheat land, where Hunters or Dreadnought predominate, Cross 7 is unlikely to give the same returns as these varieties. If Cross 7 is grown in these circumstances for the sake of the ease of harvesting, this benefit might be purchased at the expense of a loss in yield as compared with Hunters or Dreadnought. Only local observation will tell which factor weighs more heavily. On the lightest wheat land the straw of Cross 7 may at times be as short as to make harvesting with a binder difficult, but this short straw is not a disadvantage to the header.

Hunters

The excellence of this variety is proved by its long-standing record. It is one of the oldest New Zealand wheats. On the better classes of land—and with few local exceptions it should be confined to these—it still is an excellent wheat. Its large ear and considerable adaptability render it of great value to wide areas in Canterbury, viz., the Kaiapoi-Rangiora, Paparua-Springs-Ellesmere, Geraldine-Temuka, and Waimate-Morven districts. Its rival on the best classes of wheat land is Dreadnought which, however, is more susceptible to adverse soil or weather conditions. During the last two seasons Cross 7 has made considerable inroads on the Hunters area, reducing the latter from 14.3% in 1936 to 10.9% in 1938. This, no doubt, is due to the resistance to lodging exhibited by Cross 7 on areas where even Hunters—which stands up moderately well—frequently "goes down." If confined to dis-

tricts where Tuscan and Hunters are grown alternatively, i.e., where maximum yields are not expected, this is presumably a sound move. But in districts with the most favourable conditions, farmers should be aware that frequently Hunters will heavily outyield Cross 7. Even though Cross 7 permits the use of the header where Hunters has to be reaped caution should be applied on such classes of land before Hunters is replaced by Cross 7.

Whilst at present Hunters is losing ground, one feels that in certain districts, such as the Wakanui-Longbeach area, a wider distribution of Hunters might possibly be advantageous. One might suggest a greater consideration for Hunters and Cross 7 at the expense of Tuscan. On the edge of the dairy country, too, Hunters is valuable because of the usefulness of its straw for feed.

College Hunters, the older strain which had been in use for some fifteen years before the distribution of Hunters II., has now been re-selected in response to numerous demands from wheatgrowers. A limited supply of seed has now become available at Lincoln College under the name of "College Hunters." A pure line of Hunters II. (Bell's Hunters) is also available.

Dreadnought

It is surprising that a variety which has been grown in New Zealand for a considerable number of years should suddenly increase in area to the extent that Dreadnought has done in the course of the last two years. Ten years ago a few mixed crops of this variety were grown on the downs south of Oamaru. The seed was purified by a local wheatgrower and later pure seed was produced by the Pure Seed Station. There is no doubt that Dreadnought is the most suitable wheat we know for the district where it was originally grown. Soon it spread into the Morven-Willowbridge district, and recently it has advanced into the Levels and Geraldine Counties and even further afield into North Canterbury. There is no reason to believe that it will not further increase in area.

Dreadnought is one of the highest yielding wheats grown in New Zealand. There are good indications that it does best on rich, well-drained country. It is doubtful whether it will succeed on heavy land liable to water-logging; under such conditions and where highest yields irrespective of baking quality are desired, Victor is probably more suitable. It is only

moderately drought-resistant, as was proved by its slow yield in Waitaki County in the harvest of 1938. It stands up well, but not as well as Cross 7. It "shakes," and therefore cannot as a rule be headed. This, however, is no important consideration on the downs where it is mostly grown at present, since ripening occurs too unevenly for the header to be applied. All these characteristics tend to restrict its area to certain limited districts. Where it has been found suitable, it should, however, be grown, since hardly any other wheat will give equally high returns. Its baking quality is similar to that of Tuscan; thus, in view of the large quantities of Cross 7 now available for blending, a somewhat increased quantity of Dreadnought constitutes no danger to the milling and baking industries. On the whole, Dreadnought deserves serious consideration on the best classes of wheat land, and it should be tried where highest yields can be expected.

Jumbuck

This variety has shown a steady decline in area in recent years. In 1936 it was 6.7% of the area, in 1937 5.6%, in 1938 only 3.5%. In view of its general characteristics and performance this is not surprising. Jumbuck has loose chaff and poor straw; although it is being headed occasionally, this doubtless entails a risk. It requires fairly good land to succeed. As an autumn wheat it is liable to go down badly and its yield, though high in places, cannot be relied upon to the same extent as that of other varieties. As a spring wheat it is more suitable since its early maturity gives it some advantage over Tuscan and Cross 7. But even for late sowings, it is likely to be at least partially displaced by Tainui which is still earlier, more drought resistant, has fairly tight chaff, and is a much better yielder. On weed infested land for late sowings, however, Jumbuck with its large flag deserves first consideration. Its baking quality is high as a rule, although exceptions are not uncommon. In summarising, it can be stated that Jumbuck—apart from small districts where it has proved itself more generally—has a place as a wheat for late spring sowing on good land, but that even there Tainui should receive a trial in comparison with the older variety.

Velvet has declined in recent years to the proportion of less than 1% of the wheat area. There are a few

scattered crops in many counties. There seems little justification for the retention of this variety.

Marquis is another example of a variety which has spread after many years of sporadic cultivation in New Zealand. It has assumed important proportions in the Hawarden-Waikari-Waipara area, although there the last season has brought a decline in the number of crops. In other Canterbury districts, notably in Kowai-Rangiora-Eyre, there are a number of crops. In Marlborough, on the other hand, the Marquis area has steadily declined; this, no doubt, is due rather to its weak straw than to its yield, which, on the average, equals that of the main varieties of the district. Marquis has fairly loose chaff, although tighter than Hunters or Jumbuck, tall, fairly weak straw; it is easily injured by dry weather; it matures somewhat earlier than Cross 7. On good land high yields are frequent, but some doubt is justified as to the steadiness of its performance. In suitable localities, for later sowings, a moderate proportion of Marquis may be recommended, especially in view of the premium which is paid on account of its excellent grain properties.

Major is now almost entirely confined to Nelson, where it is largely grown for feed wheat. Where wheat is grown for this purpose only, the low baking value does not detract from the high yields which often are obtained from this variety.

Victor is still grown sporadically. Its low baking value as a rule renders it fit only for feed wheat; but its high yielding capacity, which in favourable circumstances exceeds that of Hunters, should render it valuable for such districts as Rangiora-Kaiapoi or Wakanui. One feels that it might receive more consideration than has been the case for some years, chiefly as a high producing fowl wheat.

Montana King has given satisfaction in Southland. It is a high quality wheat which gives fair yields. In variety trials it did not yield up to the standard set by Tuscan or Taia-roa. At present no pure seed is available but supplies are being multiplied by the Pure Seed Station.

NEW WHEATS

Tainui. Seed of this variety recently released by the Wheat Research Institute, will become available at Lincoln College this autumn.

Tainui is a wheat which resembles Tuscan in appearance. It has a large head and larger grain, fairly tight chaff, is not resistant to lodging and matures even earlier than Jumbuck. As an autumn wheat it has outyielded Tuscan on numerous occasions, but its weak straw does not commend it for early sowings, except where lodging is not to be feared. In addition, its early flowering exposes it to frost risk when sown too early. Therefore, if the ground is ready in the autumn—specially in localities where lodging is frequent—growers are warned not to sow Tainui. This variety has been bred as a **spring wheat** for sowing after swedes or turnips, or wherever the land has not been got ready in time for autumn sowing. As a spring wheat, Tainui has given satisfaction, especially in South Canterbury. In variety trials it has outyielded Tuscan and Cross 7 on various occasions. Its baking quality is superior to that of Tuscan, but inferior to that of Cross 7.

Taiaroa, a wheat very similar to Tainui, has shown higher yields than the latter in the Balclutha district of South Otago and in Southland. It is earlier maturing than Tuscan, a better yielder, but has also weak straw. It is recommended only for the districts mentioned above, where seed is now available.

“**New Tuscan**” is a variety which will be released by the Institute shortly. It is closely similar to Tuscan in general characteristics, but

usually returns higher yields, especially on the better classes of land.

Bencubbin, a Western Australian wheat, has been grown for some years in North Otago. It seems to suit the local conditions but it is yet uncertain whether it has definite advantages over other varieties. Its straw is fairly weak, its baking quality about equals that of Tuscan.

OBsolete WHEAT VARIETIES

A number of varieties which have been tried for a number of years and showed no distinctive promise are listed below:—

Federation.—This variety, which is grown in Marlborough, is rapidly being displaced by Cross 7. It yields no more than Cross 7 and has a poor baking quality. There seems to be no reason for its retention.

Garnet.—Except for latest sowings on good land, Garnet has been shown to have no place in New Zealand.

Hollow-straw Tuscans have almost disappeared. There seems no reason for retaining them.

Gurkha and **Gallipoli**, Australian wheats of low quality, have shown little promise.

Yeoman has almost disappeared. Its yields were mostly disappointing.

Red Marvel.—Still grown in Nelson, yields less than Major in that province and should therefore be rejected.

Copies of this Bulletin may be obtained from the Secretary, Canterbury Chamber of Commerce, P.O. Box 187, Christchurch.